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PHOTOGRAPHIC INTELLIGENCE MEMORANDUM

AMATEUR PHOTOGRAPHY FROM COMMERCIAL AIRCRAFT

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PHOTOGRAPHIC INTELLIGENCE MEMORANDUM

AMATEUR PHOTOGRAPHY FROM COMMERCIAL AIRCRAFT

This memorandum is in response to a request from DD/P (reference RQM/OIS K-4261) requesting information on the taking of aerial photographs by non-professional photographers while flying over the Soviet Union using amateur cameras and film. The Division regrets that it has no information on seating arrangements and crew positions aboard Soviet commercial aircraft (requirement paragraph 3c).

The following pages are not classified and may be separated from this report:

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AMATEUR PHOTOGRAPHY FROM COMMERCIAL AIRCRAFT

Aerial photographs secured through the use of conventional cameras, films, and filters are capable of yielding considerable information to the trained observer. Information is desirable on topography, vegetation, industry, and transportation, as well as many other aspects of the earth's surface. This paper presents information on methods by which such photography may be obtained to yield a maximum of detail.

The choice of a camera for aerial use is restricted primarily by quality. The camera used should be of good quality utilizing a fast lens capable of sharp definition and a dependable shutter mechanism with a selection of high speeds ($1/100$ th, $1/200$ th, and $1/500$ th of a second). The size of a photographic image exposed at a fixed distance is a result of lens focal length; the longer the focal length, the larger the image. It is, therefore, desirable to use as long a lens as is practicable and convenient. Because of the smallness of the negative and the shortness of the lens, sub-miniature or "spy" cameras, such as the Minox, are of little use. The 35mm cameras, such as Leica, Contax, and others, yield excellent results, but are handicapped by their relatively short focal lengths. The focal length problem may be overcome through the use of long focal length lenses, however, these lenses are conspicuous and their use could call unwanted attention to the photographer. A high quality folding camera such as the "Ikonta 11c" or the "Super

Ikonta B" is most desirable for this type of photography, if space or concealment are unimportant.

Choice of Film:

The film used should combine speed with a minimum of granularity. An excellent type of film for use on clear sunny days is the relatively slow but extremely fine grain Adox KB-14. Kodak Panatomic X will do equally well. Kodak Plus X is an excellent choice for a suitable general purpose film and will yield satisfactory photographs under adverse conditions. Color film is not recommended for this type of photography.

One of the major problems of aerial photography is atmospheric haze. A K-2 filter or a minus blue filter should be used for all aerial shots.

Pre-setting the Camera:

Prior to boarding the aircraft, the camera should be pre-set so that no unnecessary handling need be done when in the air. Assuming a bright day, and a camera equipped with a K-2 filter or minus blue filter, using Kodak Plus X film, the camera should be pre-set to:

Focus - infinity,

Lens stop - f3.5,

Shutter - 1/250 or 1/300.

Should an area to be photographed appear in cloud shadow, the shutter speed should be dropped to 1/100th or 1/150th before exposing. The above settings are approximate and an exposure meter reading may

be taken before boarding and its results substituted for the above. A word of caution -- don't forget to allow for the filter factor if a light meter is used.

Seating:

On boarding the aircraft, the photographer should attempt to get a seat next to a window well back of or forward of the wing. If possible, the side of the aircraft should be chosen which will be away from the sun in flight. This latter precaution will prevent sun flare in the lens or window. The window should be wiped as clean as possible.

Exposing a Photograph:

The camera should be held firmly in both hands; forearms, elbows, and upper arms should neither touch any portion of the aircraft nor should they touch the body. This procedure will prevent a large portion of the aircraft vibration from being transmitted to the camera. This same problem of vibration prohibits the lens touching the window during exposure.

If possible, at least two exposures of each subject should be made. The first exposure would normally be made when the object to be photographed is at a 90° angle to the direction of flight of the aircraft. The second exposure should be obtained when the object has fallen slightly to the rear or at an angle of about 85° . The 2 photographs will allow stereoscopic examination of the object in a three dimensional presentation.

Essential Data:

There are some items of essential data which must accompany the photography if it is to yield a maximum amount of information. The first of these items is a description of the flight - departed from (place) at (time); arrived (place) at (time). Then the time of each photograph should be recorded and transmitted with the photography. This allows an approximate determination of the geographic location of the subject.

The camera description is also needed. Brand name, model number, and lens focal length should be recorded. The focal length, in particular, is vital information. Each lens has a fixed angle of view based on its focal length, and it is this angle that allows a photo analyst to accurately determine measurements on the photograph. The essential data is reducible to the following:

1. Time and place of departure,)
2. Time and place of arrival,) For all stops enroute
3. Manufacturer, model No., and focal length of camera,
4. Time of each exposure.

If the foregoing procedures and suggestions are followed, and if the essential data are provided with the photographic negatives, the photographer will assure a maximum utilization of his photography.

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